WHAT IS CLAIMED IS:

1. A process for modifying a surface of a quartz glass crucible, said process comprising,

coating a silica sol liquid comprising a metal salt and a partial hydrolyzate of an alkoxysilane oligomer on said surface of said crucible, and

heating said crucible coated with said silica sol liquid to form a transparent coated layer comprising a crystallization accelerator derived from said metal salt.

2. The process of Claim 1, wherein the metal salt is a metal organic acid salt or a metal carbonate of one or more of magnesium, calcium, strontium, or barium.

3. The process of Claim 1, wherein the silica sol liquid is coated on a part of an inside and/or outside surface of the quartz glass crucible.

4. The process of Claim 1, wherein the silica sol liquid comprises 0.01 to 15 weight % of metal content, based on an oxide, and 0.5 to 30 weight % of silicon concentration, based on SiO_2.

5. The process of Claim 1, further comprising,

drying the coated silica sol liquid, and

heating said dried silica sol liquid at a temperature of from 350 to 1200°C, for 10 to 120 minutes.

6. The process of Claim 1, wherein the metal organic salt is a carboxylate of formula $C_nH_{2n+1}COO$, where n is an integer of from 3 to 7.

7. The process of Claim 6, wherein the metal organic salt is selected from the group consisting of n-butyric acid, α-methyl butyric acid, iso-valerie acid, 2-ethyl butyric acid, 2,2-dimethyl butyric acid, 3,3-dimethyl butyric acid, 2,3-dimethyl butyric acid, 3-methyl pentanoic-acid, 4-methyl pentanoic acid, 2-ethyl pentanoic acid, 3-ethyl pentanoic acid, 2,2-

dimethyl pentanoic acid, 3,3-dimethyl pentanoic acid, 2,3-dimethyl pentanoic acid, 2-ethyl hexanoic acid, and 3-ethyl hexanoic acid.

8. The process of Claim 1, wherein the silica sol liquid further comprises a β-diketone.

9. The process of Claim 1, wherein the silica sol liquid further comprises an organic solvent selected from the group consisting of an ester, an alcohol, a ketone and a hydrocarbon.

10. The process of Claim 1, wherein the partial hydrolyzate of an alkoxysilane oligomer is obtained by hydrolyzing one or more silane compounds having at least one alkoxy group.

11. The process of Claim 10, wherein the alkoxysilane oligomer is selected from the group consisting of tetraethoxysilane, tetrapropoxysilane, methyltriethoxysilane, dimethylmethoxysilane, phenyltriethoxysilane, chlorotrimethylsilane, vinyltriethoxysilane, and aminopropyltriethoxysilane.

12. The process of Claim 1, wherein the silica sol liquid comprises from 0.5 to 10 wt.% of metal content based on an oxide.

13. The process of Claim 1, wherein the crucible coated with the silica sol liquid is heated at a temperature of from 600 to 1,000°C, for 10-120 minutes.

14. A quartz glass crucible, comprising a transparent coated layer, wherein said coated layer comprises a crystallization accelerator dispersed in a silica matrix on at least a portion of an inside and/or an outside surface of said crucible.

15. The quartz glass crucible according to Claim 14, wherein said crucible is obtained by coating a silica sol liquid comprising a metal salt and a partial hydrolyzate of an alkoxysilane oligomer on the surface of the crucible, and heating the crucible coated with

silica sol liquid to form a transparent coated layer comprising a crystallization accelerator derived from said metal salt.

16. The quartz glass crucible according to Claim 14, obtained by coating the crucible with a silica sol liquid comprising a metal organic acid salt or a metal carbonate of one or more of magnesium, calcium, strontium, or barium, on the surface of the crucible, and heating said coated silica sol liquid to form a transparent coated layer comprising the metal oxide or the metal carbonate as a crystallization accelerator.

17 The quartz glass crucible according to Claim 14 wherein the crucible is used for pulling up silicon single crystal.